

The attached drawing sheets include changes to Figures 1a-e, 2, 7-12, and 17. These sheets, which include Figures 1a-e, 2, 7-12, and 17, replace the original sheets including Figures 1a-e, 2, 7-12, and 17.

Attachment at end of paper:

Replacement Sheet
Annotated Sheet Showing Changes

REMARKS/ARGUMENTS

In this Voluntary Amendment, a number of amendments are being made to the description, figures and claims of the application as filed. The Applicant submits that amendments to the description and the figures are minor and do not add any new matter. The amendments to the claims have been made to better recite the claimed invention and also do not add new matter.

Due to the amendments made to the claims, there are now 28 claims pending for this application. Accordingly, we enclose a cheque for \$50 to cover the claim fee for one additional dependent claim.

Amendments to the Description

A number of minor, clerical amendments are being made to the paragraphs of the specification listed above. It is submitted that, in each instance, the amendment being entered is of a minor, clerical nature, requiring no detailed comment, and all of these amendments are merely intended to ensure that the description is entirely consistent, clear and definite.

With respect to the amendment to paragraph [0009], the term "membrane exchange assembly" should have been "membrane electrode assembly". Further, the replacement of the term "current collectors" with the term "insulator plates" merely brings the language into agreement with the final sentence of this paragraph.

With respect to paragraph [0014], a clerical error was corrected since two sentences were incorrectly joined and the term "membrane exchange assembly" should have been "membrane electrode assembly".

With respect to paragraph [0016], the adjective "at least one" was added to correspond to an earlier instance of "at least one groove network".

With respect to paragraph [0033], the term "proton exchange member" should have been "proton exchange membrane".

With respect to the amendment to paragraph [0077], the amendments simply correct a reference numeral, corresponding with the reference numeral 131 used in the drawings to identify the tie rods. Also, this paragraph was amended to correctly describe the surfaces of the anode and cathode flow field plates which is supported by the corresponding figures.

With respect to the amendment to paragraph [0089], the amendments simply correct reference numerals and properly refer to the term "groove junction portion".

With respect to the amendment to paragraph [0110], the amendment simply is made to identify which Figure shows eight and ten transfer slots 180a.

With respect to the amendments to paragraph [0144], it is to be noted that the term "gas diffusion layer", otherwise known as the acronym GDL is sometimes used in this art. Solely for consistency with the earlier terminology, the acronym GDM, "gas diffusion medium" is being inserted.

With respect to the amendments to paragraphs [0149], [0152], and [0157], these simply correct the reference to the parts of one of the components to "3.8" from "38", and it can be noted that this is wholly consistent with the data given in the relevant tables, so that no new matter has been added.

Amendments to the Figures

With respect to the drawings, amendments are being made to Figures 1a-e, 2, 7-12, and 17. In Figures 1 and 2, the amendments to the lead lines are intended merely to ensure that these drawings are wholly consistent with the specification and to aid in understanding the drawings. In Figure 7, the connection apertures have been labeled with reference numeral 160. In Figure 8, for consistency with Figure 7, the references

137, 139 and 141 now denote ports on the left hand side, while references 136, 138 and 140 denote ports on the right hand side. In Figure 9, the connection apertures have been labeled with reference numeral 160. In Figure 10, the reference numerals 182', 184' and 186' are, in effect, being switched with the reference numerals 182a', 184a' and 186a'. In Figure 11, at the right hand side reference numeral 160e has been amended to read 160ae and the reference 160e added on the left hand side; at the top 132 has been corrected to 192. In Figure 12, the sealing aperture has been labeled with reference numeral 160e. In Figure 17, the lead line for reference numeral 146 has been extended to point to the sealing groove to ensure that the drawing is wholly consistent with the specification. These amendments are simply intended to ensure consistent use with the reference numerals used in the Figures and the description and for clarity in the drawings.

Amendments to the Claims

With respect to the claims, claims 1-27 have been cancelled without prejudice and have been replaced with new claims 28-55. Accordingly, there are now 28 claims pending for this application and a cheque is enclosed herein to pay for the extra claim fee.

Claims 28-42 and 44-55 correspond to claims 1-15 and 16-27 as originally filed with various changes made throughout the claims. In particular, claims 28-57 now recite an electrochemical cell assembly rather than a fuel cell assembly. Support for this amendment is in paragraphs 22, 31 and 116 of the application as filed. The remainder of the amendments are of a minor nature to correct inadvertent errors and to properly refer to antecedents.

For instance, claim 28 has been amended to include the text "at least one" in the fourth line and "electrochemical cell assembly" in the last line to correspond to previous antecedents in this claim.

In claims 39 and 40, for consistency with the rest of the specification, reference is now being made to a "membrane electrode unit" rather than a "membrane electrode assembly".

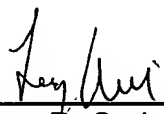
Similarly, for consistence with the rest of the specification, in claim 42, reference is now being made to "groove segments" rather than "groove elements".

Claim 43 has been added to recite a different configuration in which the coolant channels are only on the rear face of the anode plate. Support for this claim is paragraph 60 and Figures 7-10 of the application as filed.

Further, claim 50 includes the text "on one side" in the second line to further clarify the claim.

If the Examiner has any questions with regards to the claim amendments, the Examiner is respectfully requested to contact the undersigned.

Respectfully submitted,
FRANK et al.

By 

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Attachments

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U.S. Appl. No.: 10/712,060
Amdt. dated: July 19, 2005

Appendix for the Figures

Annotated Marked-up Drawings

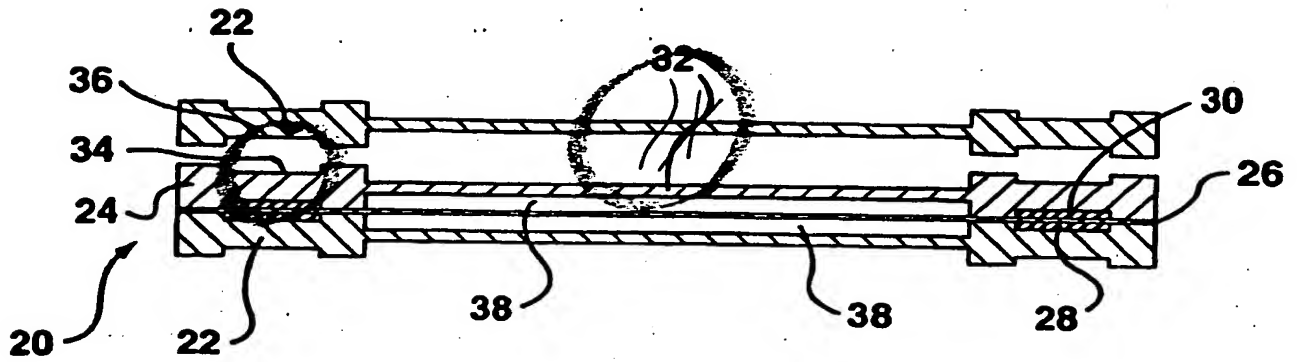


FIG. 1a

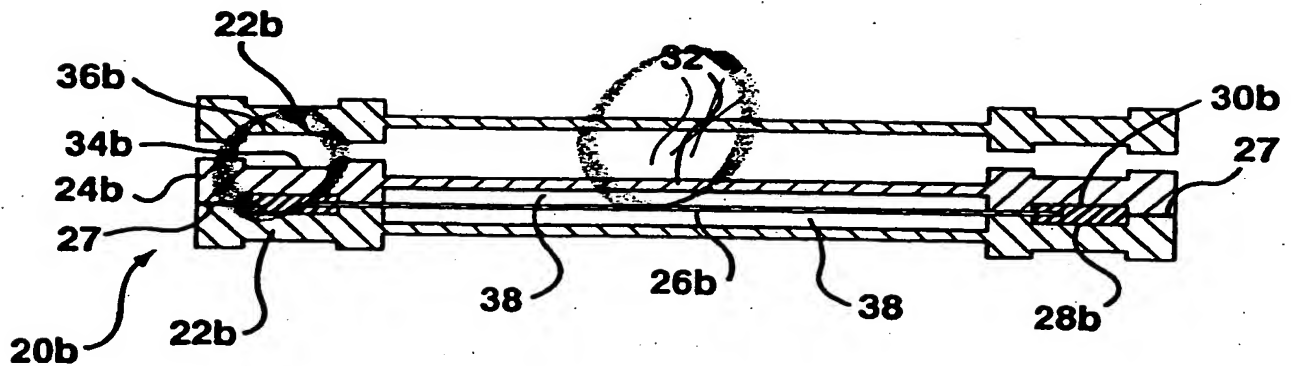


FIG. 1b

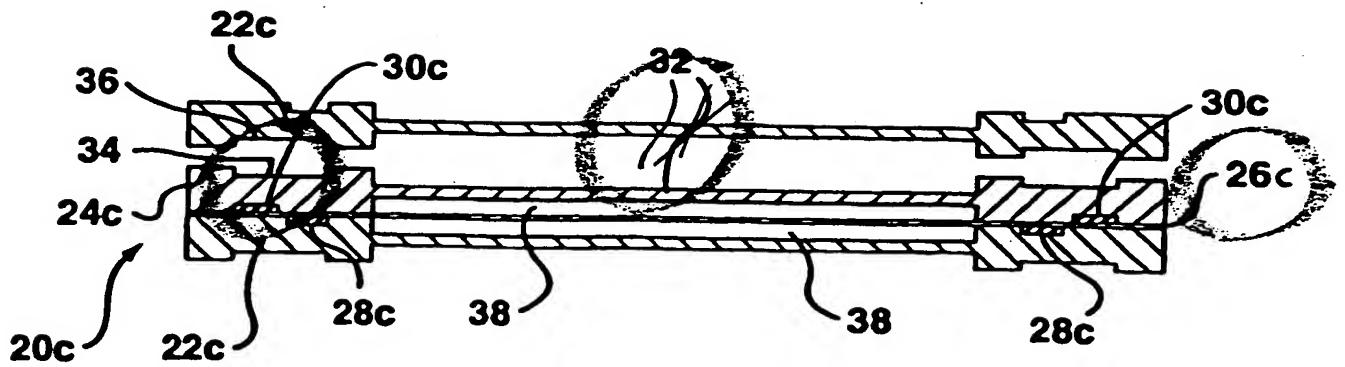


FIG. 1c

Annotated Marked-up Drawings

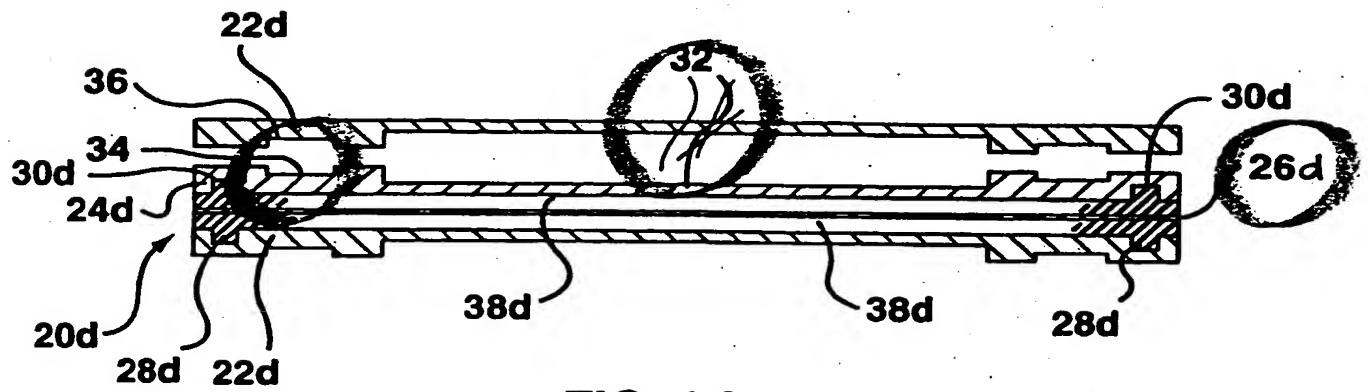


FIG. 1d

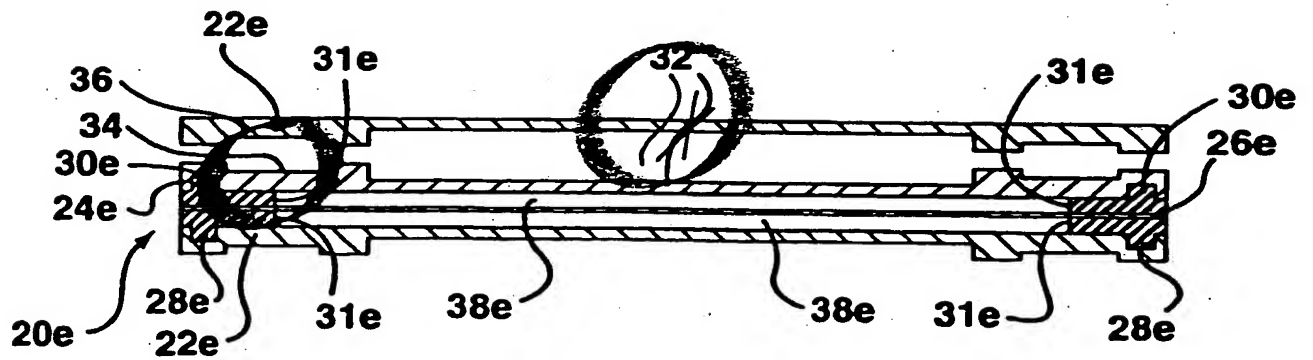
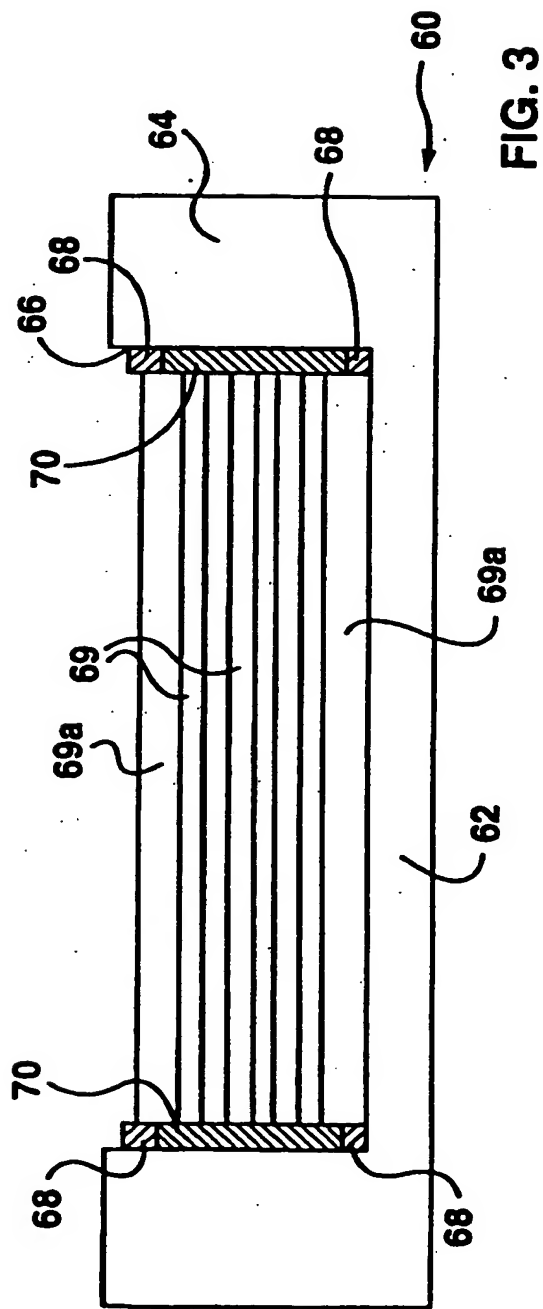
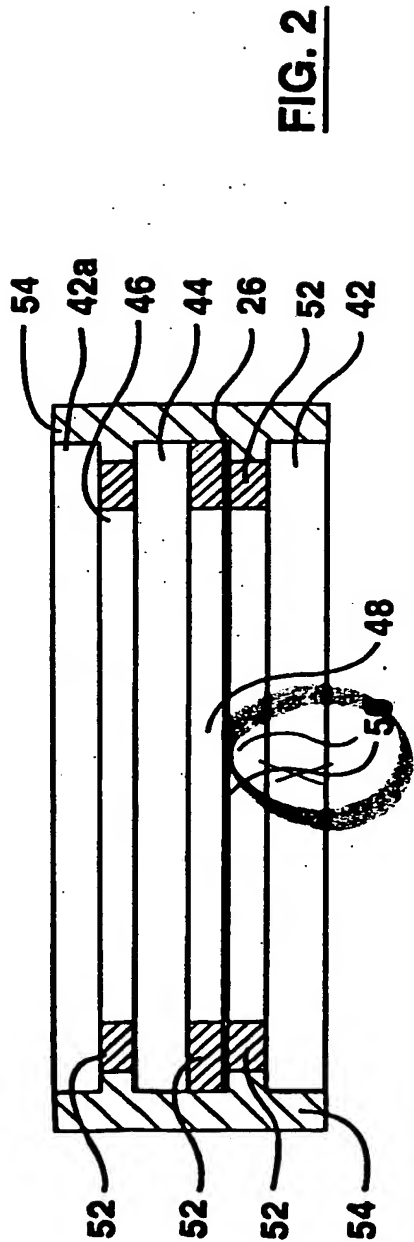


FIG. 1e

Annotated Marked-up Drawings



Annotated Marked-up Drawings

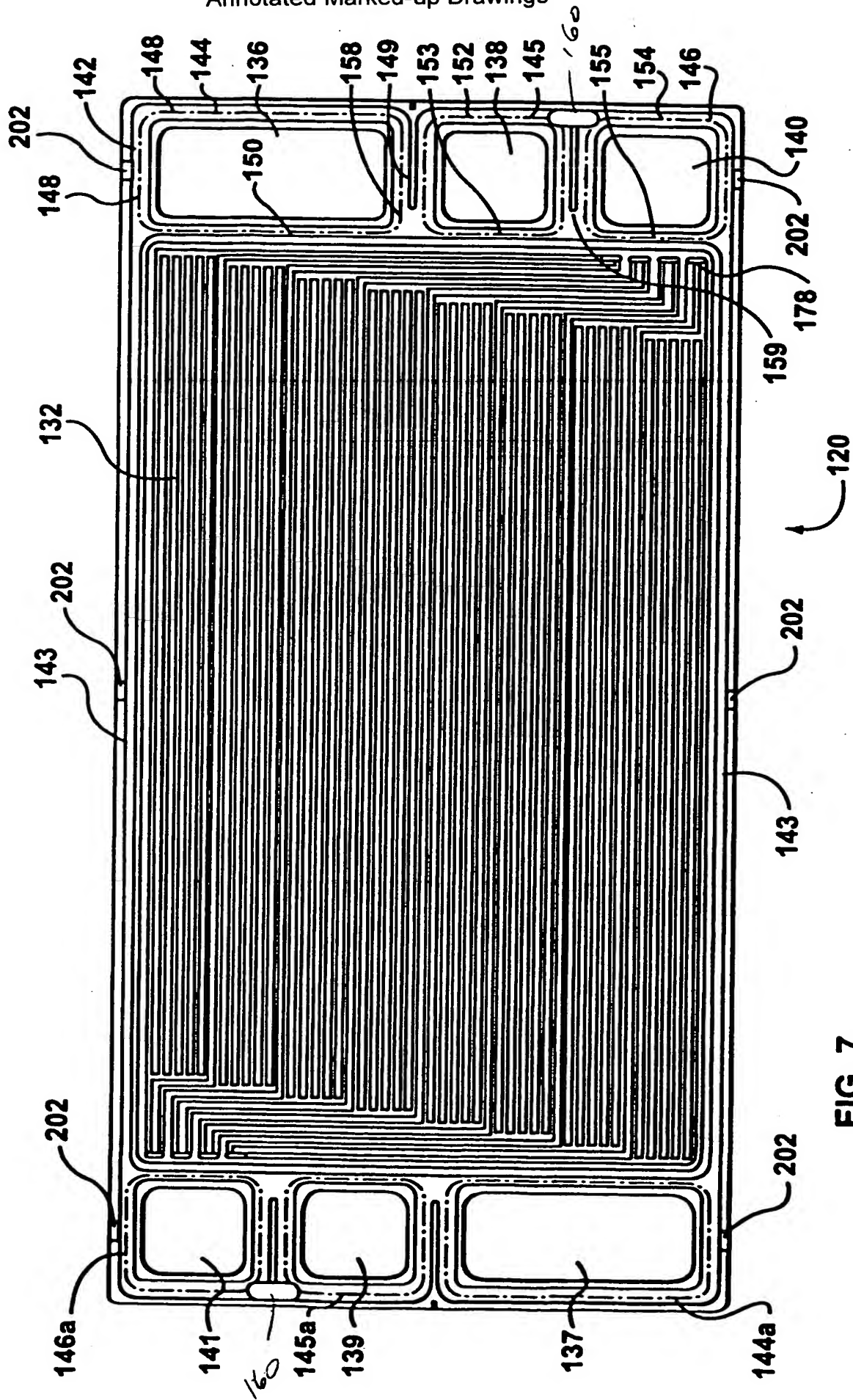
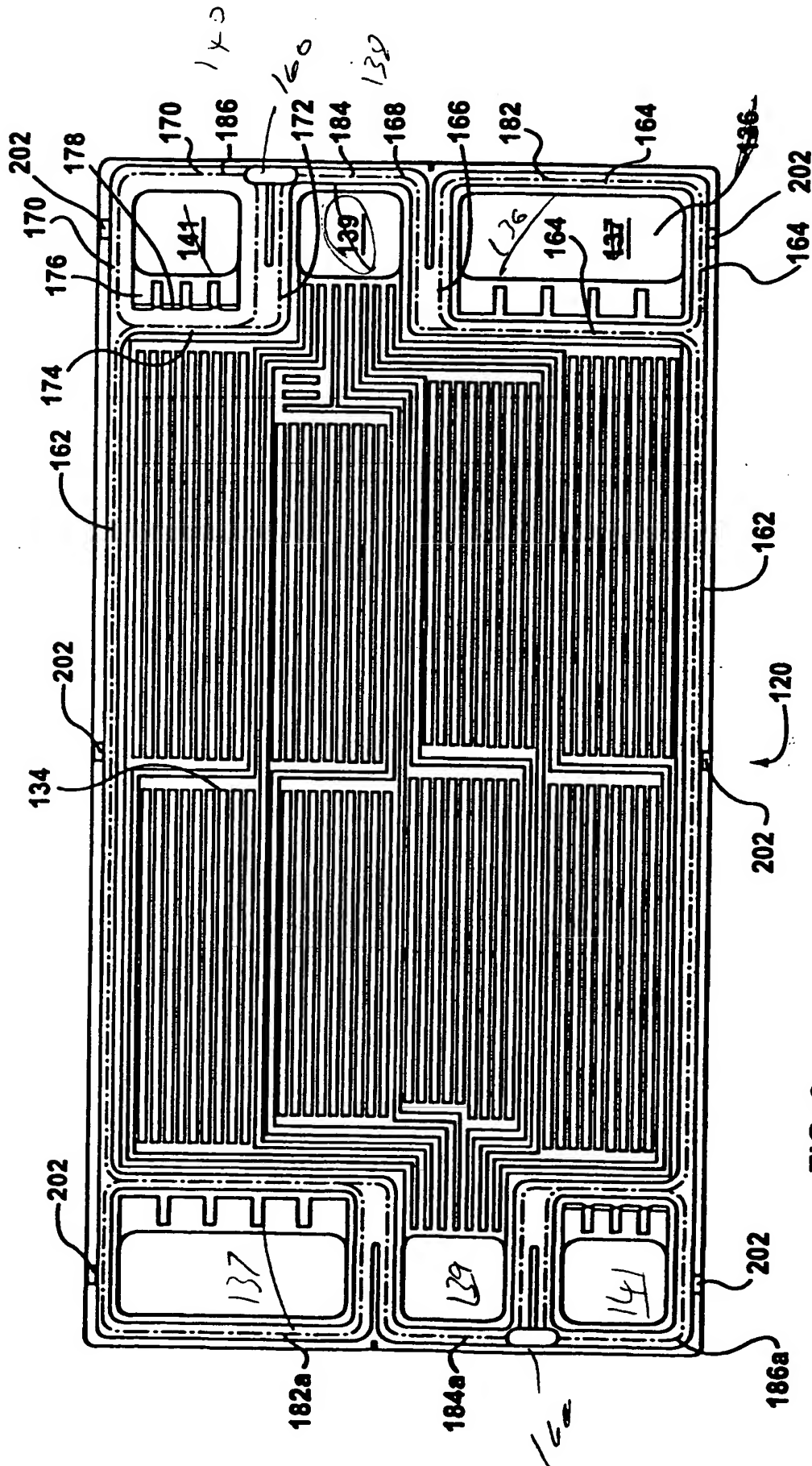


FIG. 7

Annotated Marked-up Drawings



rotten - head hair out.
washed and

FIG. 8

Annotated Marked-up Drawings

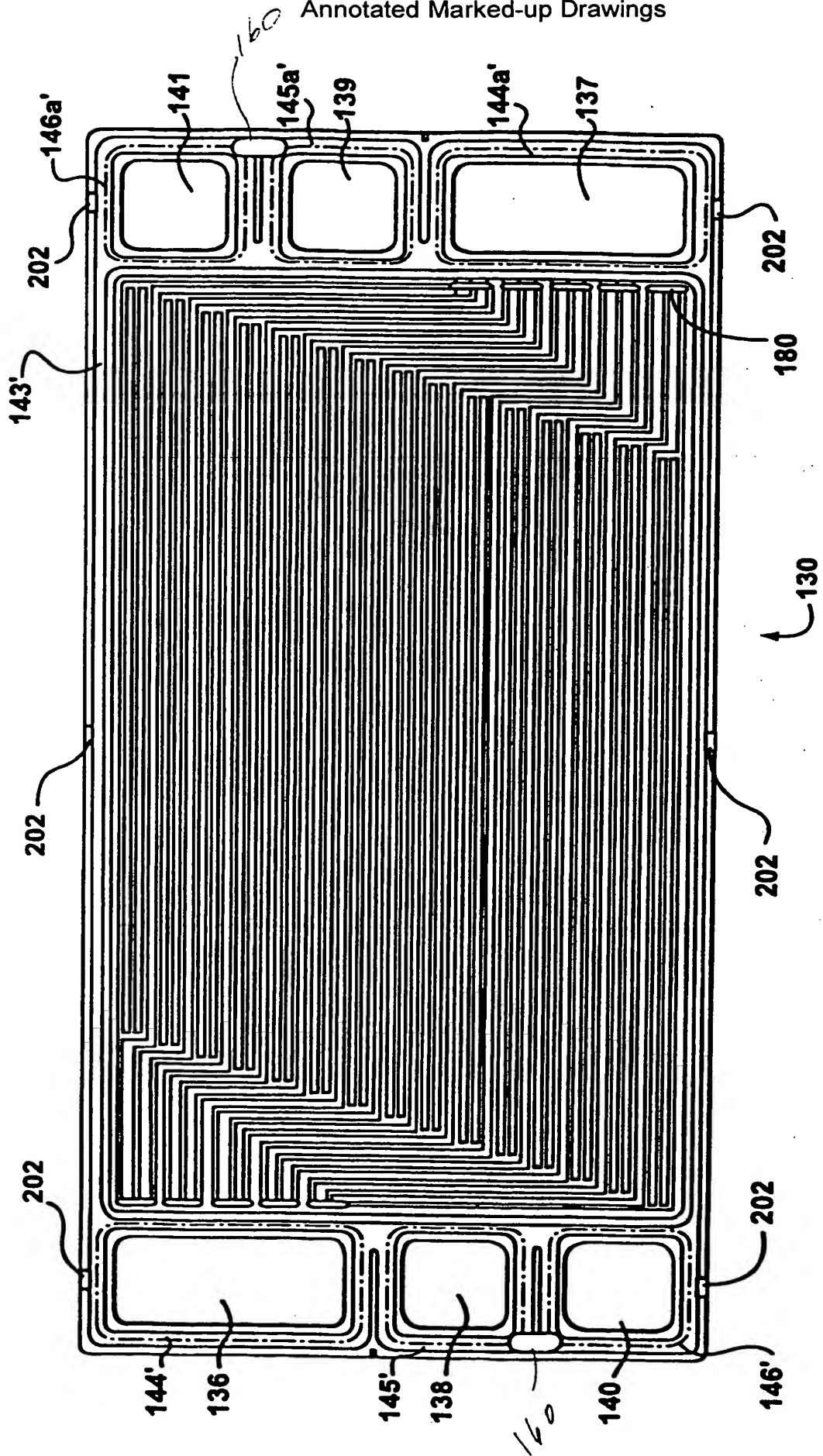


FIG. 9



Annotated Marked-up Drawings

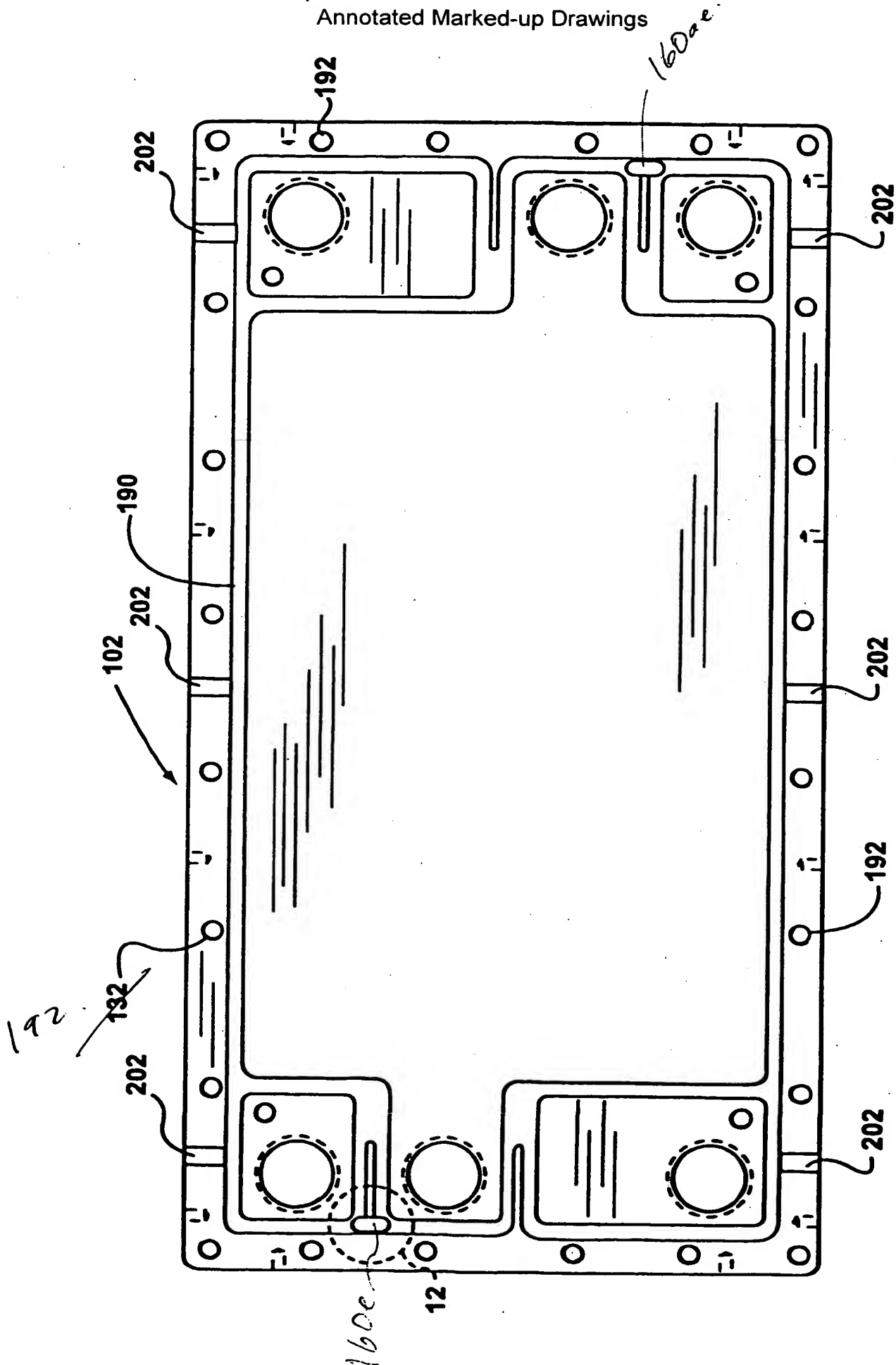


FIG. 11

Annotated Marked-up Drawings

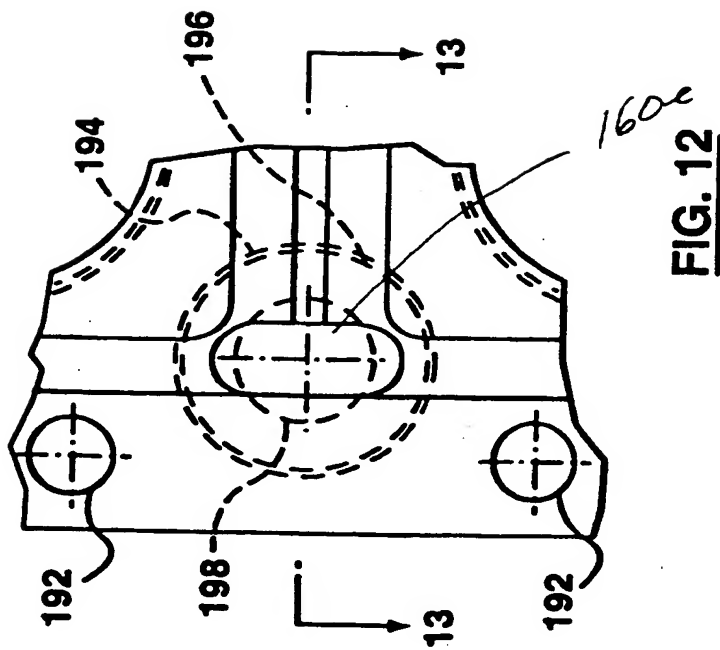


FIG. 12

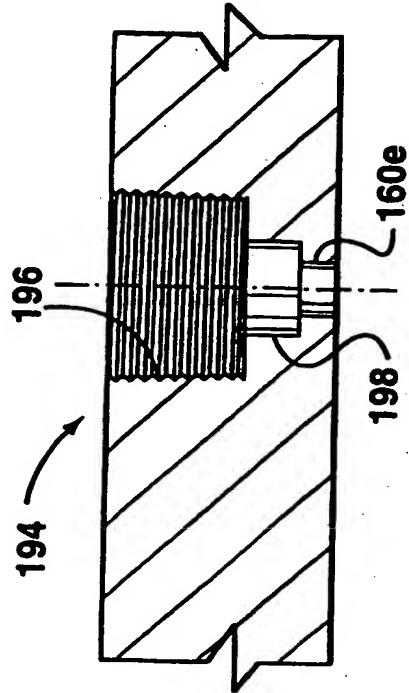


FIG. 13

Annotated Marked-up Drawings

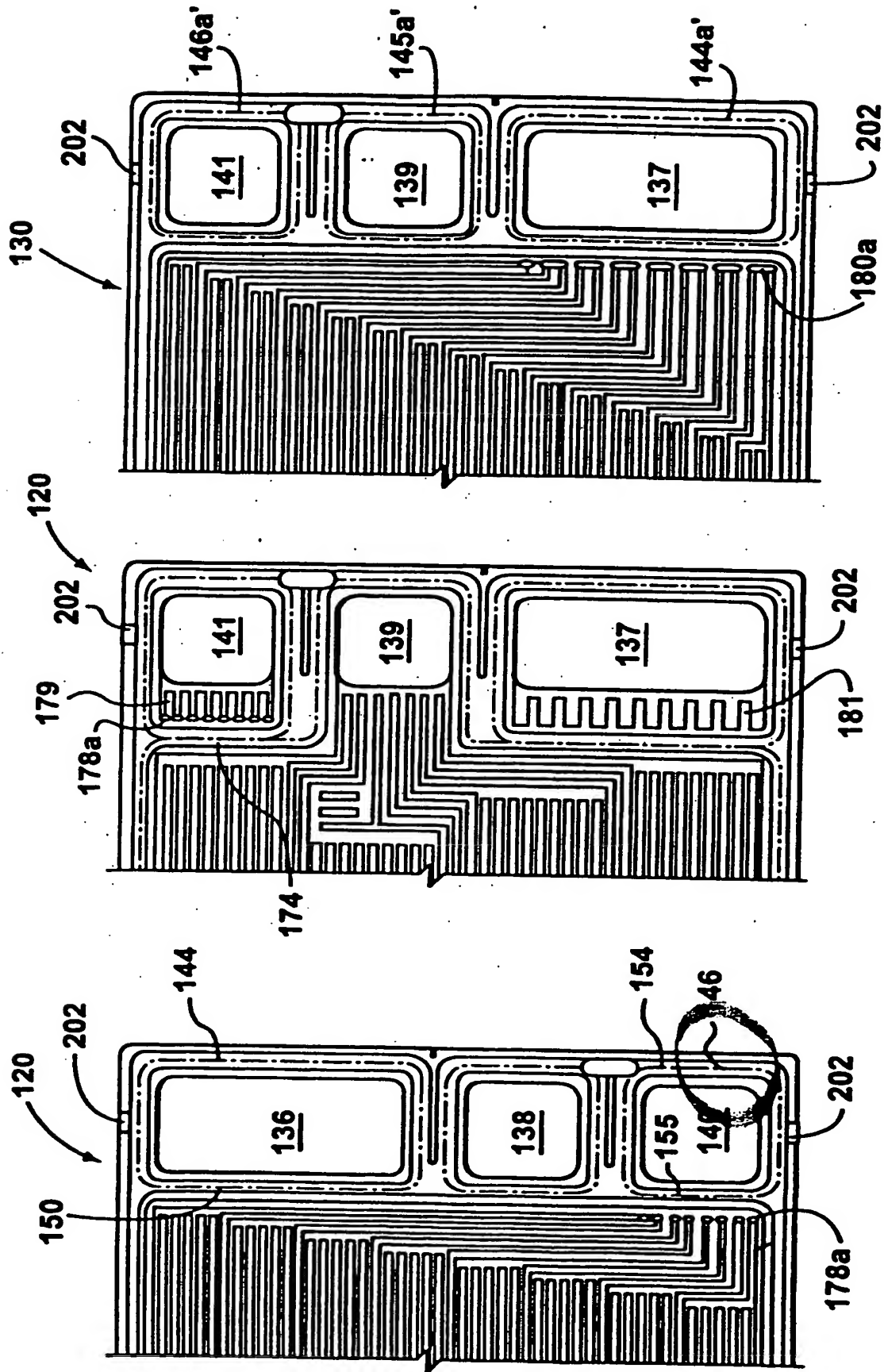


FIG. 17

FIG. 18

FIG. 19